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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,055	08/28/2003	Rahul Mital	8317-18	8992
7590 06/06/2005			EXAMINER	
Woodard, Emhardt, Moriarty, McNett & Henry LLP			TRAN, DIEM T	
Bank One Center/Tower			ART UNIT	
111 Monument Circle, Suite 3700			PAPER NUMBER	
Indianapolis, IN 46204-5137			3748	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

<b>Office Action Summary</b>	Application No. 10/651,055	Applicant(s) MITAL ET AL.	
	Examiner Diem Tran	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 5-31 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1,2,5-10 and 26-31 is/are allowed.
- 6) ☒ Claim(s) 11,14, 15, 17-19, 21, 22,24,25 is/are rejected.
- 7) ☐ Claim(s) 12,13,16,20 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

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### DETAILED ACTION

This Office action is in response to the preliminary amendment filed on 12/24/03. In this preliminary amendment, claims 3, 4 have been canceled. Overall, claims 1,2,5-31 are pending in this application.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 11, 14, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirota et al. (US Patent 5,974,791).***

Regarding claim 11, Hirota discloses an internal combustion engine aftertreatment system for treating exhaust gases exiting an engine, the system comprising:

a valve system having a valve input operatively coupled to the engine exhaust (see Figure 1);

a catalytic soot filter having a soot filter input coupled to the valve system and having a soot filter output; an NOx adsorber (10a) having an input coupled to the soot

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filter output (i.e. downstream of said filter) and having an adsorber output (see Figure 1, col. 4, lines 53-61); and

a bypass pathway (6b) having a bypass input operatively coupled to the second valve output and having a bypass output operatively coupled to the adsorber output (see Figure 1).

Regarding claim 14, Hirota further discloses that a fuel injector having an injector input coupled to the fuel pump and having an injector outlet coupled to the soot filter input (see Figure 1).

Regarding claim 18, Hirota further discloses that the valve system comprises a proportional control 3-way valve.

***Claims 19, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Eguchi (JP 6-33735).***

Regarding claims 19, 25, Eguchi discloses an internal combustion engine aftertreatment system for treating exhaust gases exiting an engine, the system comprising:

a valve system having a valve input operatively coupled to the engine exhaust (see Figure 3);

an adsorber (19a) having an input operatively coupled to the first valve output and having an adsorber output;

a bypass pathway (not numbered but clearly shown in Figure 3) having a bypass input operatively coupled to the second valve output and having a bypass output;

a catalytic soot filter (13) having a soot filter input coupled to the adsorber output and the bypass output and having a soot filter output (see Figure 3).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota et al. (US Patent 5,974,791) in view of Kume et al. (JP 60-045711).***

Hirota discloses all the claimed limitations as discussed in claim 14 above, however, fails to disclose an igniter coupled to the soot filter input. Kume teaches that it is conventional in the art, to utilize an igniter coupled to the soot filter input (9) (see Figure 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized an igniter upstream of the soot filter as taught by Kume, since the use thereof would have provided a means for igniting the additional fuel supplied to the exhaust gas to increase the temperature of the filter.

***Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota et al. (US patent 5,974,791) in view of Khair et al. (US patent 6,293,096).***

Hirota discloses all the claimed limitations as discussed in claim 11 above, however, fails to disclose an NO<sub>x</sub> sensor coupled to the adsorber output. Khair teaches

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that it is conventional in the art, to utilize an NOx sensor (50) coupled to the adsorber output (see Figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized a NOx sensor as taught by Khair, in the Hirota device, since the use thereof would have provided a means to control the fuel added to the exhaust gas to regenerate the NOx adsorbent.

***Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (JP 6-33735) in view of Ma (US Patent 6,023,929).***

The modified Eguchi system discloses all the claimed limitations as discussed in claim 21 above, however, fails to disclose an igniter coupled to the adsorber input. Ma teaches that it is conventional in the art, to utilize an igniter coupled to the adsorber input (9) (see Figure 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Ma in the modified Eguchi system, since the use thereof would have provided a means for igniting the additional fuel supplied to the exhaust gas to increase the temperature of the adsorber.

***Claims 21, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (JP 6-33735) in view of Deeba et al. (US patent 6,105,365).***

Regarding claim 21, Eguchi discloses all the claimed limitations as discussed in claim 19 above, however, fails to specifically disclose a fuel pump and a fuel injector being used coupled to the adsorber input. Deeba teaches that it is conventional in the art,

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to utilize a fuel pump and a fuel injector (32) being used coupled to the adsorber input (see Figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Deeba, in the Eguchi system, since the use thereof would have provided an effective means to introduce the reductant to the exhaust gas.

Regarding claim 24, Eguchi discloses all the claimed limitations as discussed in claim 19 above, however, fails to disclose an NOx sensor coupled to the adsorber output. Deeba teaches that it is conventional in the art, to utilize an NOx sensor (45) coupled to the adsorber output (see Figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized a NOx sensor as taught by Deeba, in the Eguchi system, since the use thereof would have provided a means to control the fuel added to the exhaust gas to regenerate the NOx adsorbent.

### ***Allowable Subject Matter***

Claims 1, 2, 5-10, 26-31 are allowed.

Claims 12, 13, 16, 20, 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication from the examiner should be directed

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to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:00 a.m. - 6:00p.m.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).

DT  
May 31, 2005



Diem Tran  
Patent Examiner  
Art unit 3748



THOMAS DENION  
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